

SHROUDLINES

A Dallas Area Rocket Society Production

January/February 2015
Volume 24, Issue 1



Member of the
National
Association of
Rockey

Section #308



What's Inside

Ignition!	1
Bills Something	2
High Power Launch Tower	3
Switch On	6
Parting Shots	11

Chris Bender captures this Phoenix
Missile lifting off in Gunter

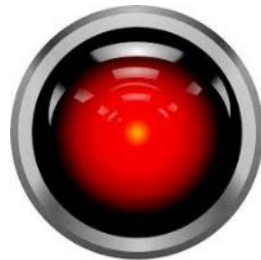
Ignition!

By Gary Briggs

Well I write this on the last day of February, looking out my window at 3-4 inches of snow, which scrubbed the February HP launch. It does make me wonder what the northern clubs plan for in the winter as there certainly are some winter launches. I can remember exactly one growing up in Michigan on one of those spectacular clear, calm, and cold days in January or February. You get antsy as you approach spring, although up there that likely doesn't happen until April and sometimes later. I don't recall if we used snowmobiles to chase rockets, but I think we may have, but I do remember that the fields were windblown, so the snow wasn't deep. I remember launching my Orbital Transport, not thinking about how well a white rocket was going to blend in with its surroundings, but it was recovered after a nice glide, without incident. I was reminded of those clear days by the cover shot from Chris Bender and the snow out the window just cemented the deal of what to write about here.

On a completely unrelated note, last weekend Turner Classic Movies (TCM) was running a Sci-Fi day with *Forbidden Planet*, *2001*, and *2010* back to back. I am sure I had probably seen *Forbidden Planet* before, but it had definitely been awhile. For a movie made in the late 50's it held up remarkably well. Yes, it is one

giant cliché when viewed through today's eyes, but it broke a lot of ground for what was to follow. The special effects were actually not that bad considering the time frame either. *2001* followed that and I had forgotten how much they could stretch a story out in the late 60's. This movie was released one year before we landed on the moon, so sensitivities to space were at an all time high, and I am sure that most people that saw it thought it was a likely future. It was also the first movie I



remember with so much blatant product placement. From the Pan Am transport, to the Howard Johnson's hotel on the space station, it used well known brands rolled into the future to make the potential seem that much more real. Alas, it did not come to pass. Not the simplicity of traveling through space or the first contact with an alien race. Anyone seen a black obelisk lately?

The funny part of seeing *2001* on this day was the *Castle* spoof of the movie the day after where a HAL like computer running a simulated Mars colony experiment, and the humans convinced it that

one of their own was a danger to the mission. It was fun to see something modern paying attention to a Sci-Fi Classic.

So its time for another one of those impassioned pleas that Shroudlines editors often make when flow of articles has gotten slow. This newsletter is a product of volunteer efforts and lives and dies on that credo. What I see issue after issue, is the incredibly diverse and fascinating layers that we have in the club. Personalities, interests, activities, everyone has a slightly different perspective on rocketry and all bring something interesting to the table. Please do consider your contribution to Shroudlines as support for the club that provides you with fields to fly on and organized launches to participate in, not to mention fun.

In this issue we start off with Bill's Something discussing his 15 years as a BAR, club officer and member. Next up is a great article from an extremely prolific rocketeer, Chris Bender, on his High Power Rocket Tower that he built long distance with his father. I can't wait to see that one in action. George Sprague follows that up with some discussion of the use of rotary switches to control altimeters as seen in his level 3 rocket. We wrap up with a few pictures and call it a day. I hope that you enjoy this issue and thank you to the contributors.

GB

Bill's Something #12

By Bill Gee

At the last club meeting, I suddenly realized that I have reached a major milestone.

It is not that I have written two years' worth of this column, though I have just done that.

It was in the month of March, fifteen years ago that I attended my very first DARS meeting. Having just emerged from my bunker where I had been riding out the thankfully uneventful Y2K transition, an ad in Sport Rocketry caught my eye...NARCON at a hotel in Richardson, mere miles away. Having read about other rocketry conventions in magazines, I realized that the time has come to become a BAR (born again rocketeer.) No way was I going to pass up going to a local event like this.

For someone who had never before flown with a club and never anything more powerful than the Mighty D motor, that initial year was mind blowing. Witnessing my first rocket contest, including that legendary intimidating event, plastic model conversion. Seeing mid and high power flights for the first time. Also in that first year, Bob Wilson talked (tricked?) me into becoming your secretary; since then, I have been your secretary more often than not.

The next several years were glorious for the club. Hosting NARCON, another NARCON and then NARAM in three consecutive years. Our launches at Windom and McGregor were very well attended, with people coming here from all corners of the state as well as neighboring states to participate.

I had a decision to make. I could dive in headlong like most others and climb the ladder of certification levels. Or I could pay forward and devote my time and energy into promoting the club and hobby. I chose the latter. Many of you old timers remember me as that guy who hid behind the camera. Countless hours went into editing pictures and capturing video to go onto the club web site.

The middle of the previous decade brought life changes. Mom got sick, then got well again. Several times. I was spending most of my time out of town with family.

When everything settled back down, the club had changed. We were no longer the only game in town as many of our sister clubs found their own flying fields. Our long-time motor vendor, Jim Turner, had passed away and no one was able to continue in his large shoes. The law suit over the legal status of ammonium perchlorate composite propellant continued to drag on. We lost some flying fields and saw others become unusable. The bad economy caused many to drop out of the hobby.

My philosophy was now to build more and fly more. And slowly, I have been doing that.

At this point, the outlook is getting better. We have an active high power field again, with another waiting for the right crop and weather conditions. We have a local motor vendor again. The law suit is done and in our favor; APCP may be purchased and enjoyed with no interaction with the government other

than paying sales tax. NAR is now restoring your previous certification level after a membership lapse.

Looking forward, a level 1 bird is on the virtual drawing board. I am trying (though still falling short) to have a qualified flight in every event in every contest.

But my past experience still sets my priorities. Having grown up without a NAR section nearby (or had there been one, I never knew about it since this was well before Al Gore invented the Internet,) I value being part of an active club. As I see it, providing the public a safe, legal and fun place to fly is our primary purpose. The second is outreach to continue to introduce rocketry to future participants.

Here's to another fifteen years...

If you would like to discuss this further, post your comments to the DARS-General Yahoo group at <http://groups.yahoo.com/group/DARS-General> or Ye Old Rocket Forum at <http://oldrocketforum.com> where I like to hang around.

Editors note: *Here's to you Bill and congratulations on 15 years...and thank you again for your contributions to the club and this publication!*

Adjustable High Power Launch Tower

Words and Pictures By Chris Bender

As part of an entry into larger minimum diameter (MD) rockets I had been working on plans for a high power capable launch tower for some time. Although the standard methods of launch guidance like rail buttons, conformal rail guides and launch lugs are applicable to MD projects; the point of such a rocket is to go as fast as possible and as high as possible.

Therefore, it is best to minimize the amount of drag causing fiddly bits in the design, hence the tower solution. This isn't revolutionary thinking to anyone who has watched one of the altitude or duration contests, but I'm looking for something a bit bigger than the

towers used therein. To this end I researched high power towers other people have built, and integrated/adopted/blatantly stole varying design features from multiple examples. Then I beefed up everything because over building is what I do, and ran the plans through a couple of design refinement cycles with my Dad, Lon. He has been maintaining, repairing and up-arming everything from Hawk missiles to Abrams tanks over the last 40 years. In other words, he is the expert in all things metal, and

is also the one who cut and fabricated many of the complex parts for the tower.

The tower is designed to function for 29 mm – 75 mm diameter rockets, though I can't see building a 75 mm MD rocket I don't want to build another tower if it comes to that. This flexibility requires that the rails be readily ad-

justable and that the entire structure be sufficiently rigid for high impulse flights. Therefore, the outer frame is made from the same 1010 aluminum extrusion that we use for launch rails, and



There was a great deal of concern in my wife's voice when she called me at work to ask if I was expecting a 25 lb package from my Dad. It's possible I failed to mention this project ahead of time...mercifully she is a good sport.

water jet cut aluminum rings (1/8"). The central opening of the rings is 13", which would allow for up to 1.5 caliber semi-span fins on a 75 mm rocket. The rail was cut into 18" sections and the central hole tapped (1/4-20). The rings are sandwiched between two sections of rail, with a piece of threaded rod running through the hole in the ring. This rod has a 1/8" section in the center that is unthreaded to keep it centered between the rail sections. To ensure that the rods do not twist and un-

screw themselves, aluminum plates were fabricated to bridge the joint. These plates, and everything else that attaches within the extrusion channel, were held in place with T-nuts sold by 8020 specifically for their extrusion products. As mentioned, the rings are spaced 18" apart making for a total length of 6' in the base configuration. The outer structure is held to the base using wing nuts and the previously mentioned threaded rods. This makes it easy to extend the tower if need be; there is an additional set of 2' rails that can be added to the bottom in about 10 minutes.

The inner guide rails are made of a similar 8020 aluminum extrusion product (designated 1012) that has a curved profile across two faces. The central rails are approximately 6' long (with additional 2' sections that can be added if need be) and held to the base plate by 1/4-20

machine screws. The rails are held at the top by aluminum brackets that match the curved profile of the rail, and whose spacing is adjustable by loosening a few machine screws also. The inner guide rails are additionally supported at two points by threaded rod that braces against the

outer frame. These rods attach to the central rails using tapped blocks that accept the threaded rod, and have holes to accommodate attachment to the rail using the previously mentioned T-nuts. These rods do not directly thread into the outer frame, but pass through holes in the extrusion and are then held in place by a set of wing nuts and washers on both sides. Although it looks complicated, the rail spacing can be changed in a few minutes using only a screw driver. It must however be pulled from the ground to access the bottom screws.

The base is made from stainless steel (1/4") as to make it as damage resistant as is practical, and was also cut on a water jet. Dad did some nice polishing and personalized it with "C F Bender and Sons" for me and the launch crew before mailing. A 12" stainless steel ground spike (1/2" diameter) screws into the base plate boss, or a 5" rod can be attached instead for placing in a pivoting launch base. Each outer frame ring has a set of tabs with a hole; these are for the attachment of guy wires (or in

this case 1" nylon tie-down straps, one set of 3 will be used) to further stabilize the tower when staked directly to the ground. In the interest of fire safety a welding blanket will also be placed on the ground for high power launches. There is also a pilot spike and spanner for its removal



as to avoid hammering the base plate directly into the ground.

I'm looking forward to putting this tower to use... now I just need to build a rocket for it. I plan to have this tower available for use at any launch I'm

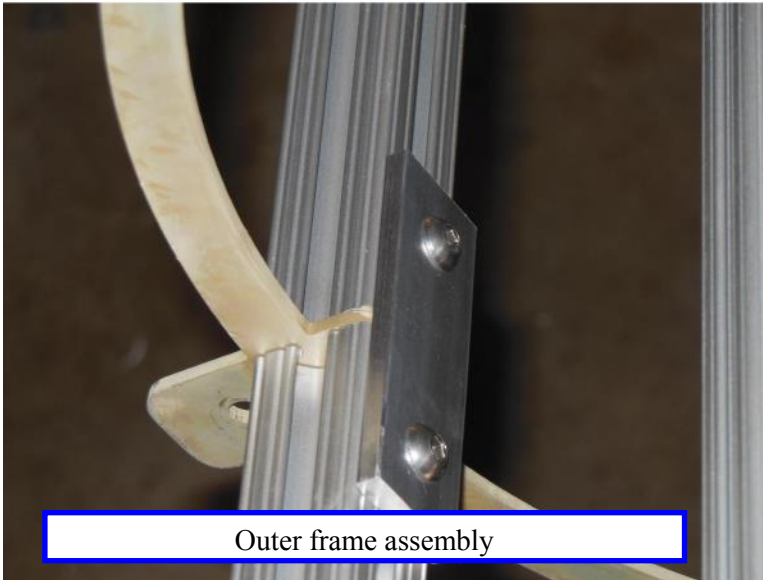
attending as long as you drop me an email (c_f_bender at hotmail dot com) in advance, and help me give it a quick cleaning before you leave the field for the day.



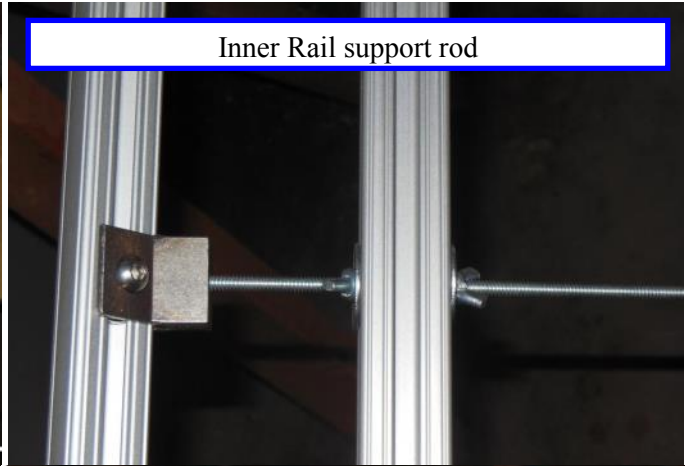
Outer frame rails cut to length



Central hole tapped 1/4-20



Outer frame assembly



Inner Rail support rod



View showing upper rail spacing adjustment



Underside with ground spike (take that dirt!) and storage of extra ring needed for extended (8')

Switch On

By George "The Other" Sprague

Considering using an altimeter or two in your next project? Rotary switches are nifty little devices that will make it easy to switch the power on and off for your altimeter at the pad, and even serve as a safety disconnect for hefty amounts of black powder charges, especially at Level 3.



Essentially, they have two sets of poles; to choose one you insert a flat head screwdriver in the slot and rotate the switch to the desired position. Let's take

a look at how to prep and install these babies.

First, select the side that will be considered the ON or ARMED position. Attach the two wires of appropriate length (measure twice!) that will go to the POWER side of the altimeter to the two poles on the chosen side. Twist them in place, then, using rosin core solder, solder them in place. DO NOT skip the soldering part! Then slide some shrink tubing over the pole and shrink using a heat gun for added protection.

To install on your altimeter bay you need to drill a 1/2 inch hole to thread the switch into – if you take care not to enlarge the hole you will be able to thread the switch in place. Slide the retainer nut from the other side over the wires and thread and tighten. I like to add Permatex silicone gasket maker around and over the nut – this keeps it in place, will not shake loose under

vibration, and should you need to replace the switch it is easy to remove.

One important thing to do is make sure the soldered joint is not stressed. One method is to use a small clamp or small bolt and washer to clamp the down the wires so if pulled the tension goes to the clamp, not the soldered attachment points.

I also like to color code my switches, green dot on the ON side, red for OFF. And oh yes, if you'd like the switches to be flush with the altimeter bay, use a Dremel sanding attachment to widen the hole just enough so the switch rests in there and you can still thread the switch in.



There are several companies that provide these; Dog House Rocketry sells them along with some great wiring, connectors and other items to make your altimeter installation easy (<http://doghouse.blastzone.org/>) Aerocon Systems also sells them along with other great stuff (<http://aeroconsystems.com/cart/index.php?p=home>)

Give it a try, and fly 'em safe and high!

Use Your DARS Card and Save Money—Member Discounts



8.25% Discount on the field and at meetings



10% Discount on all rocketry related items. Lots of kits and motors from Estes and Aerotech



10% Discount on all rocketry related items. The Dallas store carries Estes, Quest, Aerotech, and PML kits with a great selection of Estes and Aerotech motors.



Additional 5% discount on regularly stocked motors. Enter DARS in the coupon field at check out. Huge inventory of Aerotech motors.



from deep in the heart of Texas

20% Discount on all rocketry related items. Great selection of saucers, odd rocs, and launch equipment.



Plano @ Parker and 75

10% Discount on all rocketry related items. Estes kits and motors. Great selection of plywood and balsa.

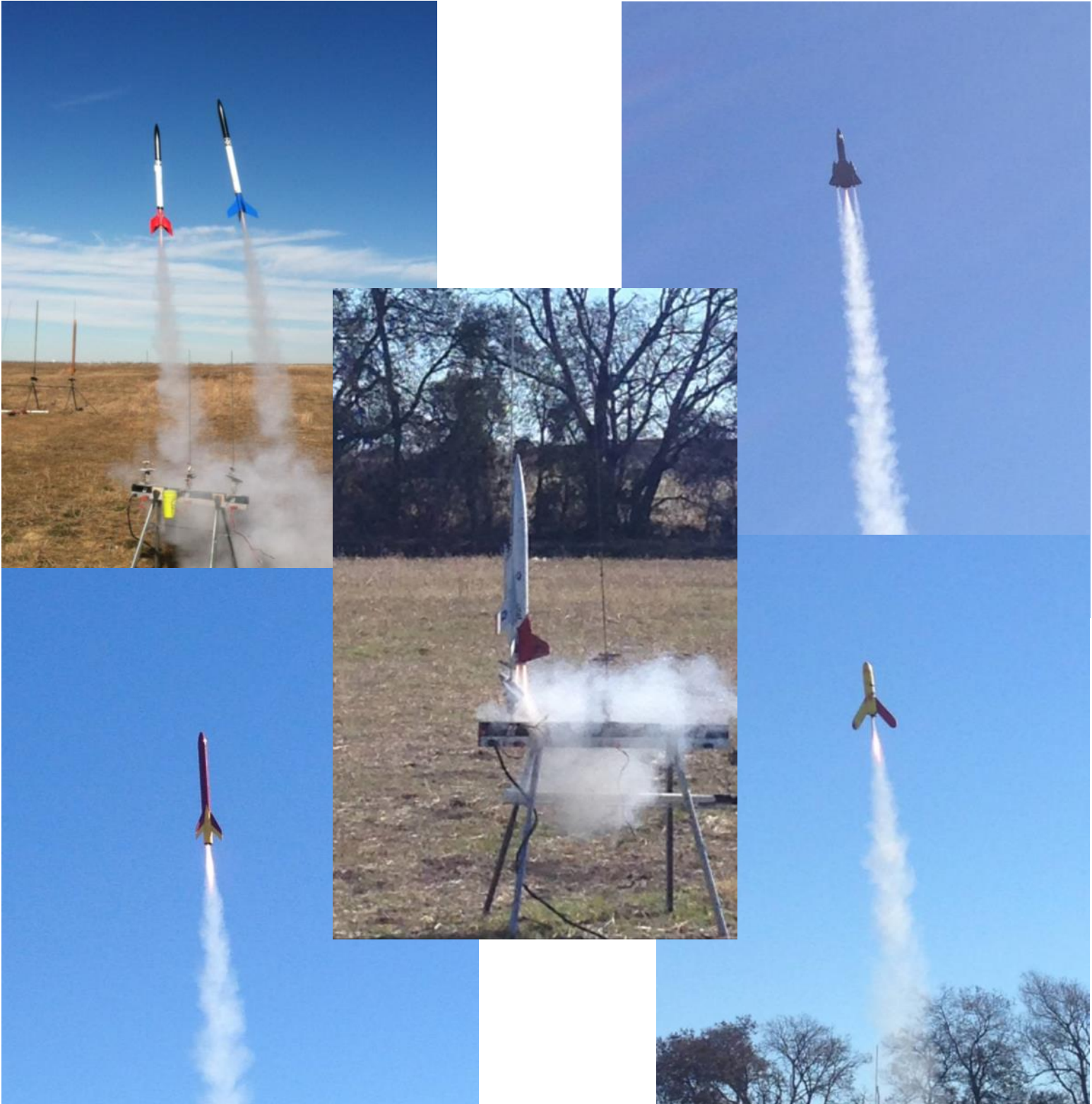
DARS supporters not currently offering a discount



Click on logos to link to websites

Parting Shots

Photos by Various Artists



Top left clockwise: Chas Russell captures he and Buzz McDermott's Semroc SLS Aero-Darts in a drag race, Sam Barone's SR-71 on 3 motors, George Sprague's upscale Mosquito, and Gary Briggs' Frisco rocket in Frisco. Center: Gary Briggs' Snarky on 2 D12s.



Top left clockwise: Another shot of last issues cover rocket coming off the pad, Chuck Crabb captures these shots from the end of the year Frisco launch. Center: George Sprague holding Scott Cook's skull rocket, picture by Chas Russell

Fire!

Here are a couple of items acquired through section safety grants to aid in fire suppression at DARS launches. Hopefully we never need them, but it is best to be a Boy Scout and “Be Prepared”. Thanks to Sam Barone for pursuing these items with the NAR. Cost to the club = \$0.

Collapsible pump on the left and Fire Swatter on the right



How to Contribute to Shroudlines



We all share a love for the rocketry hobby and all have different experiences and expertise to share. You don't have to be a Pulitzer Prize winner to write for this publication. Anyone can do it!

Submissions can be in the form of plain text files, emails, or MS Word documents. Pictures can be of most any format, but .jpg files are generally the norm. Keep the content family friendly and free of political discussion; just rocketry.

We publish every 2 months so we need your content submitted by the 15th of an even numbered month (i.e February 15, April 15, June 15, etc.). You can submit via the contacts page on dars.org or direct to the editor at garyb2643@att.net.

DARS Officers

President	Jack Sprague
Vice President	Dave Shultz
Treasurer	Suzie Sprague
Secretary	Bill Gee
NAR Senior Advisor	Sam Barone

Upcoming Events ([link to calendar](#))

3/7	DARS Business Meeting @ Coppell
3/14	MEGA-Launch Contest @ Frisco
3/21	Monthly Launch @ Frisco
4/4	DARS Business Meeting @ Coppell
4/18	Monthly Launch @ Frisco

The Dallas Area Rocket Society is a non-profit chartered section of the National Association of Rocketry (“NAR”). Its purpose is to promote the hobby of consumer rocketry in the Dallas/Ft. Worth metropolitan area.

Membership in DARS is open to all interested persons. Membership in NAR is encouraged, but not required. Annual dues are \$10.00 for individuals and \$15.00 for families. The entire family, including children, are welcomed to the meetings. Go to the website, fill out and send in an [application](#), to join or renew your membership.

The club normally meets on the first Saturday of each month at 1:00 p.m. and the current meeting location is in Coppell, just off the Sam Rayburn toll way and Denton Tap Road.

Visit the DARS website for the meeting location: www.dars.org